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European adolescent substance use: the roles of family structure, function and gender

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ABSTRACT

Objectives The aim of this study was, first, to explore family structure and measures of family functioning in relation to adolescent substance use and secondly, to establish if these relationships differed according to gender or according to the city of origin of the sample.

Design, setting, participants The study surveyed pupils aged 14–15 years in representative samples drawn from five European cities: Newcastle upon Tyne, Dublin, Rome, Bremen and Groningen. Data were obtained on 3984 participants in relation to their substance use, living with both biological parents, confiding in parents and grandparents, and supervision, as well as other variables representing delinquency, social class and drug availability.

Results Living with both parents was associated with reduced levels of drug use in four cities but not in Dublin, due perhaps to the high availability from peers in that city. It was not associated with reduced levels of regular drinking. The effect of confiding in mother was evident in all cities and in relation to substance use in general. However, when a delinquency variable was added to the logistic regressions, its significance in relation to polydrug use disappeared. Supervision was somewhat more important in relation to male than female drug use.

Conclusion Living with both parents is a less robust barrier to substance use than qualitative aspects of family life, particularly attachment to mothers. The latter is a robust inhibitor of substance use irrespective of regional differences in drug availability, weakening only in the face of more generally problematic behaviour. Perhaps because of their greater tendency to risk-taking or rule breaking, supervision appears more important for male than female drug use. These findings underscore the role of families, but especially that of mothers, in regulating the substance-related behaviour of young people.

KEYWORDS Adolescent, protective factors, substance use.

INTRODUCTION

Epidemiological studies suggest that drug use is now widespread among European youth (Miller & Plant 1996; Hibbell *et al.* 1997). This phenomenon is said to contribute to crime (Wichstrom, Skogen & Ola 1996), to effect mental and physical health adversely and contribute to risk-taking and suicide (Gould *et al.* 1996;

Gilvarry 2000; Ramrakha *et al.* 2000). Epidemiological data also point to a range of factors said to underlie drug use, for instance genetic (Maes *et al.* 1999) and peer influences (Parker *et al.* 1998), high availability (Hofler *et al.* 1999) and geographical location (Miller & Plant 1996). Much the same may be true of under-age drinkers, said to share a common underlying predisposition to substance use (Lynskey, Fergusson & Horwood 1998).

As the first social environment, and as the source of key attachments, it might be expected that the child or young person's family should also exert a substantial influence on substance use. Nevertheless, it is not clear which aspects of families do in fact affect rates of youth substance use. For instance, Hope, Power & Rogers (1998), emphasizing family structure, have argued that loss of a parent through separation is linked with long-term escalation of substance use to a greater degree than loss even through parental death. Others have reported links between parental separation and the most severe end of the youth drug use spectrum (Nurco *et al.* 1996a, 1996b). However, Hess (1995) has proposed a potentially protective effect: that parental separation may foster earlier independence and maturation of at least some young people. Indeed, in one of the few studies to examine the independent effects of family structure in relation to other commonly cited variables, Miller (1997) has argued that family structure is not a statistically independent influence on substance use. An associated issue concerns the role of fathers in affecting rates of substance use by offspring, about which there are few data, although Farrell & White (1998) reported that substance use by young people is more likely in the absence of a father or stepfather.

Others have tended to emphasize the importance of qualitative aspects of family relationships (Bahr, Marcos & Maughan 1995; Farrell & White 1998). For instance, Bahr *et al.* (1995) reported that family attachments, or bonds, 'feelings of closeness and intimacy . . . perceived monitoring, communication and joint activities', are associated negatively with substance use, even after taking into account peer influences. Indeed, research in the child mental health field has tended to the view that adversity antecedent to parental separation such as inter-parental conflict, rather than parental separation itself, is the crucial predictor of ultimate psychosocial adjustment (Hetherington & Stanley-Hagan 1999; Nicholson, Fergusson & Horwood 1999; O'Connor *et al.* 1999).

In addition, it is possible that family factors impact in different ways on male and female children. For instance, Bahr *et al.* (1995) reported that negative correlations between family attachments and drug use were stronger for females than males, a similar finding to that of Brook *et al.* (1998) and Farrell & White (1998). These findings suggest a subtle interaction between family variables and gender on rates of substance use and that in certain conditions, despite a trend towards an equalization in overall rates of substance use (Parker *et al.* 1998), gender may retain an important influence.

Finally, recent European studies have reported marked international and regional differences in rates of youth substance use (Hibbell *et al.* 1997; Miller 1997). These variations do not correspond to levels of risk factors such

as social class, delinquent behaviour or parental separation in a simple way. This suggests that if family factors are relevant to international variations in substance use, they may vary in their influence in different settings. In the current study we examine the hypotheses that both family structure and function influence risk for substance use in European populations, that these effects differ for males and females in different settings, and are independent of potentially confounding factors such as antisocial behaviour, drug availability or social class.

METHOD

Representative samples of 14–15-year-old-school pupils in Bremen ($n = 871$), Dublin ($n = 990$), Groningen ($n = 487$), Newcastle upon Tyne ($n = 970$) and Rome ($n = 666$) completed a common core questionnaire concerning substance use, life-style and family structure and relationships. The majority of the 3984 respondents were 14- and 15-year-olds. The total was larger than in an earlier paper (McArdle *et al.* 2000) because of the inclusion of 97 respondents who were not resident, but were attending schools, within city boundaries. Hence, the prevalence of illicit drug use in the previous year (concerning an agreed core of cannabis, amphetamine, ecstasy, LSD, tranquillizers and a dummy drug, relexin) in the five cities differs slightly from the previously published rates. For the current samples the rates are 24.6% (Bremen), 29.1% (Newcastle upon Tyne), 29.9% (Dublin), 22.6% (Rome) and 19.0% (Groningen). Enquiries about certain other drugs such as cocaine or heroin were not made in all cities and so are omitted from these estimates. These patterns are consistent with other contemporary estimates of rates of drug use in European populations (Hibbell *et al.* 1997).

Sampling procedure

A cluster sampling method was used in order to obtain a representative sample of young people in each city. In Bremen, Dublin and Newcastle, schools were stratified according to school type (e.g. state or religious), socio-economic disadvantage (e.g. by levels of free school meals in Newcastle) and, in Newcastle, geographical area. In Rome, where there is a high degree of differentiation between school types (e.g. vocational or academic), only the school type was used to identify representative samples.

The number of schools was chosen in order to identify approximately equal numbers of subjects in each city. In Groningen, the smallest city, all schools ($n = 13$) were approached to take part; in Rome (with the largest population) approximately one in 60 schools ($n = 13$) were

approached; but one in six in Dublin ($n = 16$), one in five in Bremen ($n = 12$) and one in two in Newcastle ($n = 9$). None of the selected Rome schools refused, one refused in Newcastle and Bremen, four in Dublin and in Groningen six of the 13 schools approached refused to take part in the survey. In each case a refusing school was replaced from the original sampling list by a school matched on the stratification characteristics. This was not possible in Newcastle, where an all-girls' school belatedly refused co-operation, or Groningen where all schools had been approached initially, but due to the homogeneity of the school population this did not affect the representative nature of the Groningen sample. The mean age of the total sample was 15.1 (SD 0.7) years. The ages of respondents in the cities differed significantly ($F = 6.6$, $df = 4$, $p < 0.01$): Dublin respondents were significantly younger than those in Rome or Groningen. The sampling yielded more male ($n = 558$) than female ($n = 407$) respondents in Newcastle upon Tyne and more females ($n = 574$) than males ($n = 411$) in Dublin (five subjects in both Dublin and Newcastle upon Tyne did not identify their gender). However, approximately equal numbers of females and males were sampled overall.

Response rate and representativeness of sample

Of the core items concerning alcohol use, 98.7% were completed, and concerning drug use, 94.6% were completed. In Newcastle, the overall rate of non-response to the first drug use question was 9%, ranging between 5.3% in a special school to 11.1% in non-deprived schools. The corresponding percentages for Dublin were 6% [3.4% (private); 8.5% (vocational/technical)]; for Rome, 2.3% [0% (business training); 6.1% (hotel training)]; and for Bremen 3.6% [1.6% (gymnasium/grammar); 5.4% (realschule/vocational)]. Hence, in Dublin and Bremen, there was a somewhat higher rate of non-response among more disadvantaged populations. There are no corresponding data for Groningen as the schools served a homogeneous population. Hence, there may be a small underestimation of drug use in Dublin and Bremen. The proportion that reported use or an offer of a dummy drug 'relewin' was less than 1% in all cities, so over-reporting is unlikely. The proportion of students who reported inconsistently on similar questions was less than 5%, suggesting high reliability in reporting.

Survey instrument

The questionnaire was derived from that of the European School Survey Project on Alcohol and other Drugs (ESPAD), used previously in a Council of Europe sponsored international survey (Hibbell *et al.* 1997). This

provided questions on family and drug use. Not all cities agreed to ask about all substances. However, agreement was reached on a series of questions concerning use of cannabis, amphetamines, tranquillizers, LSD, ecstasy and an invented dummy drug, relewin, as well as questions concerning alcohol use. During a series of consensus conferences involving the multinational research team, the core items in the questionnaire were translated from English into Dutch, Italian and German and then back into English to ensure mutual comparability.

Procedure

Following ethics committee approval in Newcastle and its equivalent in the other cities, and with the permission of schools, the project teams sent explanatory letters to parents containing a brief outline of the project. In four cities parents were given the option of refusing permission for their child's participation (by contacting the project team or schools). In Bremen active written permission was required from parents. In four of the five cities, a graduate researcher administered the questionnaires in the presence of teachers, during extended classroom periods or in year-group assemblies. In Bremen teachers were not present. Pupils were given between 60 and 80 minutes to complete the questionnaire anonymously and place it in an envelope that they then sealed. The responses for each city were entered into a common database developed for the project.

Variables

1 The substance use questions used a 'tick box' format: whether the respondent had never used a drug or used it in the past month or year. The use of any illicit drug in the past year was termed 'drug use'. The analyses presented here concern the substances enquired about in all five cities (omitting 'magic mushrooms', solvents, cocaine and heroin).

2 Although there was no measure of drug misuse, we identified a variable 'polydrug use' by identifying an extreme group using two or more different substances in the past year ($n = 216$). This represented two standard deviations from the mean number of drugs used by the total sample and was available for 3678 respondents (92.3% of the sample). The rates of polydrug use were 6.4% in Dublin, 8.5% in Newcastle upon Tyne, 4.7% in Groningen, 5.2% in Rome, and 3.8% in Bremen. This is similar to the reported prevalence among German adolescents of the overlapping but not identical group reporting cannabis abuse and dependence (3.7%), who were also commonly multiple drug users, reported by Perkonig *et al.* (1999).

3 There were a number of items concerning alcohol use including a screening question, 'do you sometimes drink alcoholic drinks (e.g. beer, wine, spirits such as whiskey)?' with potentially three responses: 'never', 'sometimes' and 'regularly'. We included regular drinking rather than occasional alcohol use as more likely to attract social disapproval in a way analogous to drug use, or to represent risk of harmful drinking. The rates of 'regular' drinking were 16.3% in Dublin, 15.2% in Newcastle upon Tyne, 10.7% in Groningen, 3.5% in Rome and 3.4% in Bremen, a range similar to that found across the United Kingdom for 'more than nine drinking occasions in the past 30 days' (Miller *et al.* 1996). These data were available for 3933 respondents, 98.8% of the sample.

4 Earlier analyses indicated that all types of family structure other than living with both biological parents were associated with substance use. Hence, these were reduced to two variables: living with both biological parents or not ($n = 3928$).

5 Items concerning quality of relationship aspects of family life included:

a) 'who can you talk to if there is something bothering you?' with the possibility of endorsing either parent and a range of other options including a no confiding option ($n = 3889$);

b) 'where do you go after school?' with a range of options including 'home, there is usually someone there' ($n = 3904$);

c) 'where do you usually meet your friends?' with a number of options including 'at home' ($n = 3851$);

d) 'parents care about (if the young person) watches too much TV'. This item was not present in the Newcastle questionnaire ($n = 2897$).

All of these provided dichotomous 'yes/no' responses. The first item was taken to represent a confiding relationship, and the next three aspects of parental supervision.

6 Social class was derived from an item concerning parental education. This was dichotomized on the basis of a respondent's father as having a university degree or technical qualification or not.

7 Availability: this was derived from an item identifying whether a person had 'never' been offered drugs showed a significant difference between the cities ($F = 35.2$, $df = 4$, $p < 0.001$) (Dublin youth followed by Newcastle obtained the lowest mean scores on this item and so were more likely to have been offered drugs).

8 Delinquency: the questionnaire contained 11 items from a delinquency scale (West & Farrington 1973) used by four cities, omitting Rome. If the person reported a level of delinquent acts 1 SD or more from the mean for the sample as a whole, than this was regarded as positive for delinquency.

Statistics

The family variables were initially analysed in relation to substance use as bivariate analyses using χ^2 tests. Next, logistic regression using a forced entry procedure was used in order to identify family variables that were independently predictive of drug use, polydrug use and regular drinking as dependent variables. This assessed the independent effect of variables chosen on the basis of their significance in bivariate analysis. In order to identify if these effects were independent of potential confounds (social class, availability and delinquency) these were added to the logistic regressions. The family, gender, city and substance use data were also explored for significant logistic regression interactions. Where these proved positive they were illustrated in cross-tabulations using a Mantel-Haenszel procedure.

Findings

The bivariate analyses confirmed that youths living with both parents were less likely than those living in other forms of household to have used drugs in the previous year (Table 1). A reduced rate of drug use was also associated with parental supervision and confiding in parents and grandparents. The patterns of findings for regular drinking and polydrug use were similar, with the following exceptions: living with both parents and confiding in grandparents were not associated with reduced rates of regular drinking and confiding in grandparents was not associated with reduced rates of polydrug use.

Logistic regressions were conducted in order to identify if family structure was associated with reduced substance use independently of the quality of family relationships and whether any association differed with gender or city. These showed that living with both parents, confiding in mother, but not father, and parental supervision items independently predicted drug abstinence (Table 2). The findings for polydrug use were broadly similar. However, abstinence from regular drinking was not associated with meeting friends at home. Since it had not been part of the Newcastle questionnaire, the analyses were conducted with and without the parental supervision item, 'parents are concerned if I watch too much TV'. However, the findings did not differ meaningfully, nor did they differ when age was entered as an independent variable. There were no independent effects of gender.

In order to identify if these variables remained significant predictors in the presence of potential confounders (social class, drug availability and delinquent behaviour), the logistic regressions were re-calculated including these variables. The findings were similar with the exception of polydrug use, for which only the availability (Wald

Table 1 Cross-tabulations of substance use and measures of family structure and function.

	Any drug in last year		Regular drinking		Polydrug use	
Family structure						
Lives with both biological parents						
yes	650/2889	22.5%	304/3014	10.1%	139/2827	4.9%
no	311/832	37.4%	96/867	11.1%	70/807	8.7%
	$\chi^2 = 74.6, p < 0.001$		$\chi^2 = 0.7, NS$		$\chi^2 = 16.4, p < 0.001$	
Supervision						
Parents care about excessive TV						
yes	464/2086	22.2%	160/2144	7.5%	79/2045	3.9%
no	230/701	32.8%	90/721	12.5%	58/678	8.6%
	$\chi^2 = 30.3, p < 0.001$		$\chi^2 = 17.1, p < 0.001$		$\chi^2 = 23.5, p < 0.001$	
Someone at home after school						
yes	693/2986	23.2%	276/3108	8.9%	138/2924	4.7%
no	261/2719	36.3%	118/753	15.7%	71/695	10.2%
	$\chi^2 = 52.0, p < 0.001$		$\chi^2 = 30.5, p < 0.001$		$\chi^2 = 31.2, p < 0.001$	
Meets friends at home						
yes	451/2063	21.9%	188/2150	8.7%	87/2032	4.3%
no	492/1594	30.9%	206/1658	12.4%	119/1541	7.7%
	$\chi^2 = 56.1, p < 0.001$		$\chi^2 = 13.7, p < 0.001$		$\chi^2 = 19.1, p < 0.001$	
Confides in:						
Mother						
yes	429/2174	19.7%	164/2262	7.3%	84/2134	3.9%
no	520/1527	34.3%	233/1583	14.7%	124/1472	8.4%
	$\chi^2 = 99.0, p < 0.001$		$\chi^2 = 56.1, p < 0.001$		$\chi^2 = 32.3, p < 0.001$	
Father						
yes	221/1169	19.7%	108/1217	8.9%	45/1152	3.9%
no	728/2522	34.3%	289/2628	11.0%	163/2454	6.6%
	$\chi^2 = 41.5, p < 0.001$		$\chi^2 = 4.0, p < 0.05$		$\chi^2 = 10.8, p < 0.001$	
Grandparents						
yes	56/308	18.2%	24/321	8.9%	13/306	4.2%
no	893/3383	26.4%	373/3524	11.0%	195/3300	5.9%
	$\chi^2 = 9.9, p < 0.01$		$\chi^2 = 3.1, NS$		$\chi^2 = 1.4, NS$	

Table 2 Logistic regression predicting drug, polydrug and regular alcohol use.

Ranked predictive power	Drug use			Regular drinking			Polydrug use		
	Wald	Exp(B)	p <	Wald	Exp(B)	p <	Wald	Exp(B)	p <
1 Confides in:									
mother	33.3	0.6	0.001	28.4	0.4	0.001	14.2	0.5	0.001
father	1.6	0.9	NS	3.3	1.4	NS	0.4	0.9	n. s.
grandparents	0.1	0.9	NS	—	—	—	—	—	—
2 Structure									
lives with both parents	25.1	0.6	0.001	—	—	—	5.0	0.6	0.05
3 Parental supervision									
someone at home after school	24.4	0.6	0.001	7.8	0.7	0.01	17.0	0.5	0.001
meet friends at home	20.5	0.7	0.001	1.8	0.8	n.s.	6.2	0.6	0.05
Care if I watch too much TV	12.3	0.7	0.001	10.9	0.6	0.01	10.5	0.5	0.01
% Deviance explained	5.8%			3.5%			7.3%		

= 6.2, $df = 1$, $p < 0.05$) and delinquent behaviour items (Wald = 32.3, $df = 1$, $p < 0.001$) remained significant.

A significant interaction of gender and supervision indicated that, in the absence of supervision, there was a higher rate of drug use among girls but not boys (Table 3). There were also significant interactions involving the city variable. These comprised city, living with both parents and drug use (Wald = 11.4, $df = 4$, $p < 0.05$); and city, 'someone at home after school' and drug use (Wald = 10.7, $df = 4$, $p < 0.05$). Living with both parents and 'someone at home after school' were each associated with significantly reduced drug use in four of the cities but not in Dublin (Table 4). There were no significant interactions involving the city variable and polydrug use or regular drinking. There were no significant interactions concerning gender and substance use variables.

DISCUSSION

The findings suggest that living with both parents and the quality of the parent-child relationship are associ-

ated independently with the rate of drug use by young people. Subsidiary analyses indicate that in the absence of either the family structure or 'quality' variables (largely irrespective of whether the qualitative variable was 'confiding' or 'supervision') the rate of drug use was 42.3%; if both were present it was 16.6%; and in the presence of either, approximately 32%, suggesting an additive relationship. Hence, the rate of drug use in modern urban communities would remain substantial even in the absence of family risk factors, but short of the 'normalization' described by Parker *et al.* (1998). Overall, the findings are consistent with the idea that social changes have tended to 'insulate young people from the influence of adults' (McNeill 1998).

The similarity of correlates for drug use and regular drinking, with the exception for the latter of family structure, is in keeping with the concept of a common underlying predisposition to substance use (Lynskey *et al.* 1998). However, while the pattern of associations of polydrug use was initially similar to those of drug use, there were notable differences. In particular, with the addition of the delinquent behaviour and drug availability items, the significance of the family variables for polydrug use disappeared. These findings are consistent with differentiations reported previously (e.g. Hoffer *et al.* 1999) that, to a greater extent than non-regular use, regular cannabis use is related to psychosocial adversity. Hence, the data point to a possible discontinuity: drug use is linked directly with family factors but their influence on potentially more hazardous drug use is mediated through generally problematic delinquent behaviour (Miller 1997).

Brook *et al.* (1998) reported that the effect on cannabis use of a composite 'ecology/culture' variable, that included availability, diminished when a composite 'family' variable was taken into account statistically.

Table 3 Cross-tabulations of significant logistic interaction terms involving gender and independent predictors of polydrug use.

	Male		Female	
	Low	High	Low	High
Supervision*				
Use/no use	45/281	65/1311	26/342	
71/1468				
% using	13.8%	4.7%	7.1%	4.6%
OR (95% CI)	0.3 (0.2–0.5)***		0.6 (0.4–1.0)	

* Somebody at home after school.

χ^2 tests: *** $p < 0.001$.

Table 4 Cross-tabulations of significant logistic regression interaction terms involving city and independent predictors of drug use.

	Groningen		Rome		Bremen		Newcastle		Dublin	
	Low	High	Low	High	Low	High	Low	High	Low	High
Supervision†										
Use/no use	36/59	53/319	49/90	98/406	55/105	149/522	63/97	176/505	58/107	217/541
% using	37.9	14.2	35.3	19.4	34.4	22.2	39.4	25.8	35.2	28.6
OR (95% CI)	0.3 (0.2–0.5)***		0.4 (0.3–0.7)***		0.6 (0.4–0.8)**		0.5 (0.4–0.8)**		0.7 (0.5–1.1) NS	
Both parents	No	Yes	No	Yes						
Use/no use	31/65	59/318	33/39	114/457	80/164	123/465	103/137	141/466	64/116	218/533
% using	32.3	15.6	45.8	20.0	32.8	20.9	42.9	23.2	35.6	28.6
OR (95% CI)	0.4 (0.2–0.7)**		0.3 (0.2–0.5)***		0.5 (0.4–0.8)***		0.4 (0.3–0.6)***		0.7 (0.5–1.0) NS	

† Somebody at home after school.

χ^2 tests:

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$.

However, the neutralization of 'ecology/culture' by 'family' effect was evident only for boys and not girls. This is consistent with the interaction data reported here: reduced supervision is linked with increased male but not female drug use, perhaps reflecting the relative psychosocial immaturity of adolescent boys, and their greater potential for under-controlled behaviour in general.

Living with both parents and having someone at home after school showed no association with reduced drug use in Dublin. Interestingly, although Groningen offers legal access to cannabis, unlike Dublin it did not emerge from these analyses as a high availability city. This is consistent with the possibility that ease of availability alone is insufficient to escalate drug use, but that it is availability through the peer group that is important. These data suggest that very high availability through peer groups can overwhelm protection against drug use afforded by living with both parents and perhaps supervision, but qualitative, perhaps mainly affective, mechanisms provide a more robust barrier.

These findings are also consistent with the report by Rose *et al.* (1999) that the influence of parents on youth substance use shows regional variation. Focusing on abstinence from alcohol in a Finnish sample, they attributed this variation to a culture of abstinence in the rural but not urban areas, amplifying or buffering parental influence. None of our survey cities could be regarded as having an abstinence culture. Hence, the weak influence of family structure on regular drinking, also reported by Sutherland & Shepherd (2001), might represent a variation on the theme of availability and acceptability of drinking, overwhelming the influence of living with both parents. In addition, since of all the cities, Dublin has lived through an unprecedented economic boom, the reduced influence of parents may represent the cultural influence of urbanisation, reported previously to adversely effect the psychosocial adjustment of young people (Rahim & Cederblad 1986). The finding that risk factors may not have identical effects in different cultures, might indeed even be, to some extent, culture-bound, underlines the importance of local data in constructing approaches to substance use.

Interestingly, 'confides in father' had a much weaker effect on any of the substance use variables than confiding in mother. Hence, whatever the paternal role is and whatever its effect, it is not the equivalent of the maternal role and is not encompassed by the notion of 'confiding'. Brook *et al.* (1998) reported an association between 'time spent with father' and reduced cannabis use: possibly the joint activities implied by this item, perhaps also a supervisory function, rather than the more intimate notion of confiding, capture better the father's role.

Taken together, these findings suggest that living with both parents may inhibit drug use but only if availability

through peer networks is not very high. However, consistent with the views of Ary *et al.* (1999) they also suggest that attachment, particularly to mothers, is a more potent inhibitor and that this is true across cultures and substances. This tends to break down only in face of broader syndromes of antisocial behaviour.

These data are cross-sectional but are compatible with findings from recent longitudinal studies. For instance, the Christchurch Health and Development study identified early conduct problems, rather than family structure or the quality of relationships, as the key predictor of drug, predominantly cannabis use at 18 years (Nicholson *et al.* 1999). However, an earlier multiple regression analysis of the same database indicated that the parental separation, particularly after the age of 10 years, predicted substance use problems at 15 years (Fergusson *et al.* 1994), possibly through increasing the risk of early delinquent behaviour. Furthermore, the key role of mothers that emerges from the data presented here is similar to longitudinal findings in regard to youth criminality and the quality of maternal care (Kolvin *et al.* 1990).

The rates of drug use and of traditional family structure are consistent with published data (Hess 1995; Hibbell *et al.* 1997; Fukuyama 1999). However, measures of family functioning are based on a small number of items and do not include observational or parent reports. Hence, the degree to which the respondents' views represent a full or valid picture of family functioning is unknown. Also, the study is cross-sectional so that causal relationships cannot be identified with confidence. It addresses alcohol and illicit drug use and more extensive drug use but not, for instance, substance use disorder or drug dependence, which would require much more complete assessment than was possible with a self-report questionnaire.

Although we cannot exclude the possibility of other confounding variables, we conclude that both the quality of family relationships and the structure of families appear to be significant influences on youth drug use. In high availability environments or those subject to disruption due, for instance, to rapid change, the barriers to drug use afforded by living with both parents may be less effective. The young person's relationship with his or her mother is a more robust inhibitor of youth drug use, against the draw of youth subcultures. The effect of supervision may be somewhat more important for boys. However, if the young person has become more generally antisocial in their behaviour, inhibition of drug use may be beyond the capability of the family. These findings point to the importance of substance availability and antisocial syndromes in determining drug use in modern societies. They also underline the unique role of mothers in regulating the behaviour of the great majority of young people.

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